Letterkenny Gets Lean for War

BY Kim C. Russell

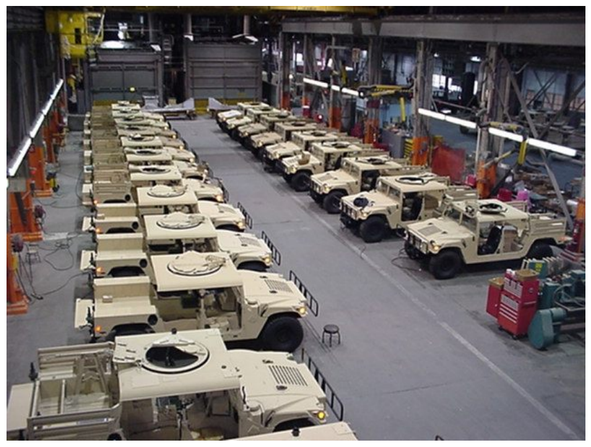
With the onset of Operations Enduring Freedom and Iraqi Freedom, the Army's depots were called on to answer the immediate needs of the warfighter. The depots, described in some circles as being as agile as a three-legged turtle, had to transform to meet the increasing demands of an Army at war. The management challenge was simple: How do you change a three-legged turtle into a thoroughbred?

Letterkenny Army Depot, Pennsylvania, has used Lean techniques successfully to meet the wartime challenge. Lean is based on the Toyota Production System, which Toyota Motor Corporation developed and implemented from 1949 to 1975. The success of that system inspired the concept of Lean manufacturing, which was first presented by James Womack in his 1990 book, The Machine That Changed the World. The application of Lean manufacturing (in the form of the Toyota Production System) is often credited for Toyota's progress in becoming the world's leading automobile manufacturer.

The Lean process exemplifies what can be done using "the art of the possible," when both management and workers are focused on making changes in a business model. The key to making Lean work is to have the workers, including union leaders, believe in it. It is important to understand that Lean is not an acronym, an event, or a program. It is a philosophy for deciding what products and services an organization should provide and how the organization can provide them in a rapid, efficient manner.

Early Success Supporting Special Forces

Letterkenny Army Depot started its Lean journey in 2002, when the depot commander, Colonel William Guinn, introduced the Lean concept. The original intent was to improve depot maintenance processes to attract new customers. As the depot transformed into a "capabilities-based depot," it was imperative that the depot provide its customers the "biggest bang for their buck."



Early in fiscal year 2003, Letterkenny experienced its first opportunity to apply Lean concepts in support of the Global War on Terrorism. The U.S. Army Special Operations Command (USASOC) had designed a specially modified high-mobility, multipurpose wheeled vehicle (humvee) known as the ground mobility vehicle (GMV) to provide a fighting platform for the anticipated invasion of Iraq. As war approached, USASOC turned to Letterkenny to accelerate production of GMVs.

Letterkenny had established a special relationship with USASOC in 1998 with the production of GMV kits for the specially modified HMMWVs. When USASOC made its urgent request known to the depot, depot managers decided to employ their newly formed Lean team to make improvements in the GMV process. The first task was to transform the depot's existing GMV maintenance and rebuild production line. The initial goal was to turn new humvees into GMVs within a 10-week turnaround time, measuring from when a vehicle came in the door to when it went out the door. Before the project could be completed, the requirement quickly changed to a turnaround time of 3 weeks.

As USASOC's requirements changed, Letterkenny successfully ramped up production to 24 vehicles a week. Turnaround time was reduced from 10 weeks to 3 weeks and then to just 8.8 days, and the floorspace required for the operation was reduced by 50 percent. Not only was the depot able to supply the warfighter with vehicles in a greatly reduced time, it also provided the customer with savings of $990,000. The depot used the savings generated to produce 18 more GMVs and thus provide USASOC with an additional fighting capability that previously had been unfunded.

Transforming Patriot Recap

The Patriot missile recapitalization (recap) program is designed to bring the ground support system to a condition of near-zero hours or miles of operation. Letterkenny is responsible for the recap of one battalion a year. In fiscal year 2003, the depot transformed its Patriot launcher rebuild program into a true Lean operation. The depot was able to generate savings of $1.2 million for the customer. Based on these savings, the Patriot Lower Tier Project Office asked the depot to overhaul four additional Patriot launchers that had not been funded.

Resetting Patriot and Avenger

By this time, Operation Iraqi Freedom was in full swing and Baghdad had fallen. The threat of Scud missile and air attacks had been eliminated, and the depot's attention turned to resetting both Patriot and Avenger missile systems returning from the war. The depot decided to incorporate Lean concepts in the initial planning sessions for the reset missions. This meant a shift in traditional thinking. The concept required a virtual look at a reset line and the implementation of Lean before the reception of assets. A member of the Lean team was dispatched to Fort Bliss, Texas, to establish the reset "line."

Team Letterkenny successfully reset three Patriot battalions 2½ months ahead of schedule. The turnaround time was critical to the redeployment schedule of air defense artillery units. Letterkenny not only completed these missions ahead of schedule but also saved the customer $1.5 million. The result was revitalized Patriot air defense systems that Soldiers could trust to accomplish their missions.

Avenger missile systems also had seen considerable action during the march to Baghdad. Avenger systems were sandblasted by windstorms, and many suffered battle and transportation damage. The depot conducted a series of Lean events, and substantial changes were made in the assembly and disassembly processes. The Lean concept eliminated unnecessary steps in the refurbishment process and created a "parts supermarket" close to the depot's work cells. The Avenger reset program saved the Army another $1 million.

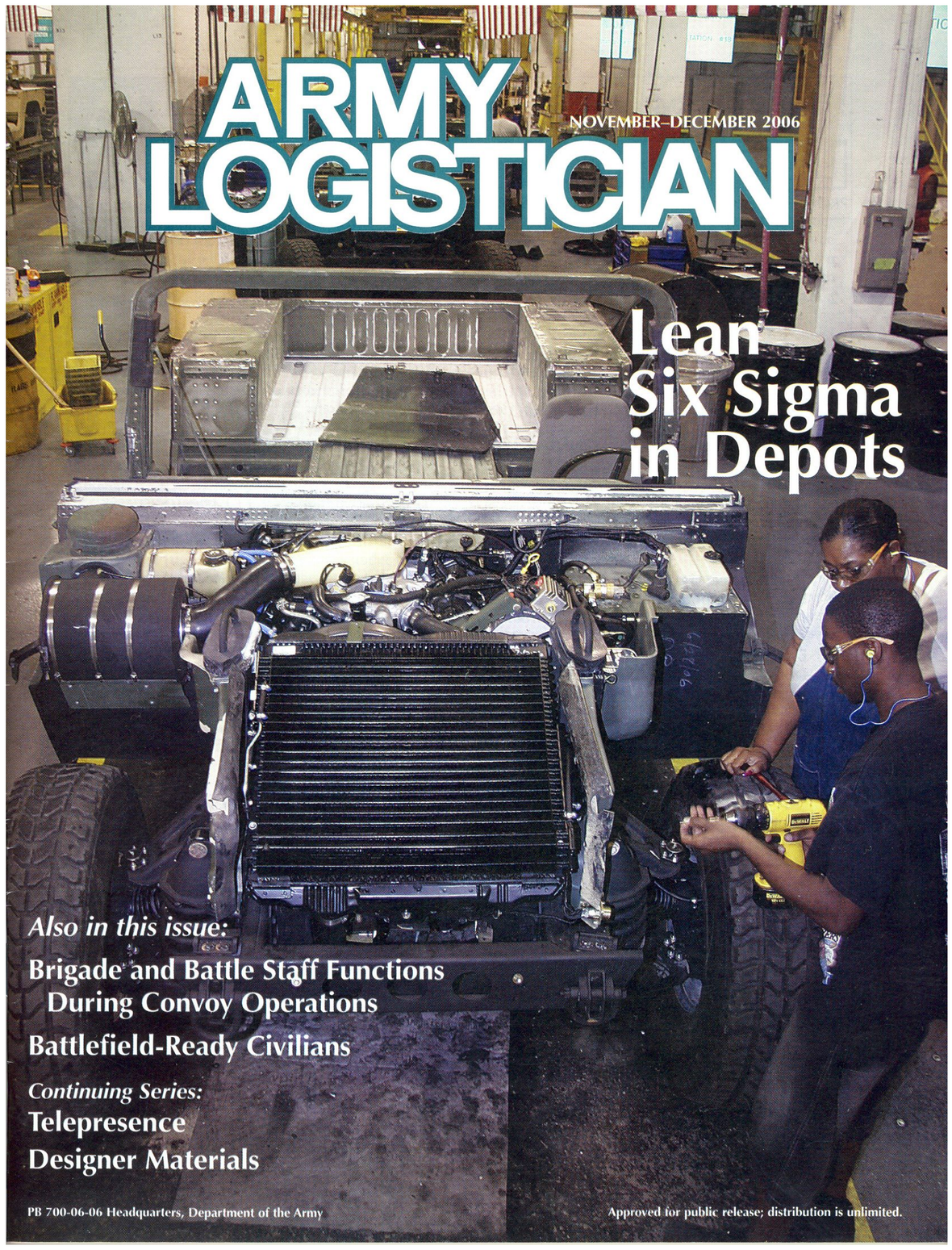
Letterkenny's implementation of Lean returned Patriot and Avenger missile systems to the field faster than expected and provided $2.5 million to the customers to support other unfunded requirements associated with the Global War on Terrorism.

Armoring Vehicles for Iraq

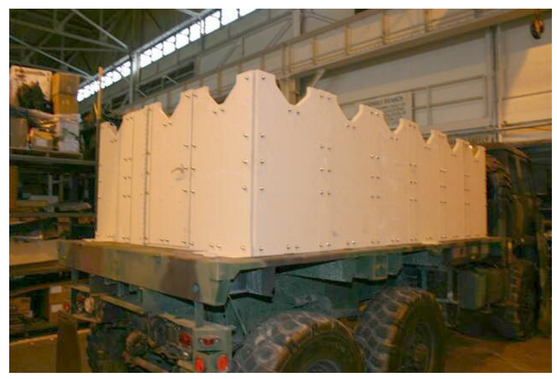
As a result of the depot's Lean initiative, Letterkenny was able to add several missions, including work on chemical-biological defense equipment, Army humvee recap, generator rebuilds, Force Provider, and several armor programs.

One of the initiatives implemented under Lean during the armor processes was the use of a "pull system." Under this system, workers do not walk back and forth to obtain parts and tools; everything they need for their work is located beside their work areas in carefully marked bins.

Lean cuts waste, consolidates operations, and, as a result, frees floorspace. The additional floorspace was critical as the depot worked to bring in new missions to support Soldier needs. Letterkenny quickly put this additional floorspace to use to meet an urgent call for armor boxes that were needed in the battle for Fallujah. The armor plating arrived on a Friday night, was cut over the weekend, and was delivered for ballistic testing at Aberdeen Proving Ground, Maryland, in less than 72 hours. The depot implemented a true Lean pull system to produce 36 of these boxes in less than 14 days.



The next call was for humvee armor door kits. Lean concepts were incorporated into the production system, and weekly output increased by 200 percent. The one-piece flow system allowed changes in configurations to be implemented immediately in the production run. Letterkenny was asked to increase its production to 860 humvee armor door kits, and the last of the kits was produced 2 weeks ahead of schedule.



Armor kits for the M969 5,000-gallon tanker provided a new challenge because the tanker had undergone a variety of design changes. However, the depot produced 150 armor kits, each containing 82 pieces and weighing over 2,400 pounds. The letter of intent to build the kits was received on 19 November 2004, and the last kit was completed on 21 January 2005. The M969 kits were completed 4 weeks ahead of schedule and $1 million under budget.

The depot also was asked to produce armor cabs for the M939 5-ton truck. Letterkenny began with a modest production rate of 5 kits a week in January 2005. Each kit included 382 pieces and weighed a total of 5,870 pounds. By using Lean processes, production was steadily increased to 25 kits a week without increasing the amount of floorspace needed. Based on the accelerated production rate, the depot was asked to produce 70-percent more kits than called for in the original program. The 400th cab was completed in early July 2005.

In October 2005, Letterkenny's success in implementing Lean was recognized when the depot became the Army's first winner of the Shingo Prize for Excellence in Manufacturing. The Shingo Prize was established in 1988 to promote excellence in manufacturing, but a Shingo Public Sector Prize was not established until 2005 to recognize government entities in the United States that have demonstrated outstanding achievements in "manufacturing, industrial, or 'maintenance, repair and overhaul' (MRO) type activities of the public sector." The depot had won the coveted prize referred to by Business Week as "the Nobel prize of manufacturing . . ." Letterkenny also won a second Shingo Prize in 2006, the Silver Award for the depot's humvee recapitalization program using Lean processes.

Today, Letterkenny continues to use Lean to provide greater value and responsiveness in support of the Nation's warfighters. Guided by Lean principals, the depot continues to return savings to its customers, increase throughput, and respond to customer needs. The warfighters deserve no less.

Kim C. Russell is the Public Affairs Officer at Letterkenny Army Depot, Pennsylvania, where she has been employed for 29 years. She has a B.A. degree in business and economics from Wilson College in Pennsylvania and is currently working on a master's degree in journalism/communication. She recently won the David Goodman Award at Letterkenny